



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Adress: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,946	11/30/2006	Stephan Oberle	27634U	6433
20529	7590	04/07/2009	EXAMINER	
THE NATH LAW GROUP 112 South West Street Alexandria, VA 22314			YABUT, DANIEL D	
ART UNIT	PAPER NUMBER			
		3656		
MAIL DATE	DELIVERY MODE			
04/07/2009	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,946	Applicant(s) OBERLE ET AL.
	Examiner DANIEL YABUT	Art Unit 3656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on **27 January 2009**.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) **1-15** is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) **1-15** is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-5, 9, and 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Korean PG Pub KR20020046534 in view of Berlinger, Jr. et al., US Patent, 6,101,892.

KR20020046534 discloses an engine auxiliary drive (see Fig. 1) comprising a(n):

Re claim 1

- First (5) and a second gear wheel (4) with tooth flanks (at 5 and 4, respectively) meshing with each other (abstract / L7-9) and that the first gear wheel (5) is made of plastic.

However, as to **claim 1**, KR20020046534 does **not** expressly disclose the tooth flanks of said toothed gear wheels being involute-free or at least nearly involute-free in the force transmission area, and transition from a concave area directly or at least nearly directly to a convex area, effective profiles of said tooth flanks matching in a manner that it comes to planiform contact regions (at A, B; Fig. Y below), linearly viewed in cross section (Fig. Y below), along a complete height (Fig. Y below).

Berlinger, Jr. et al. teaches the use of tooth flanks (see Fig. 1 and 2) of said tooth gear wheels (10, 12; 20, 22) being involute-free or at least nearly involute-free (see flanks free of involutes in at least Fig. 2) in the force transmission area (near 10a, 12a, 20a, 22a), and transition from a concave area (10b, 12b; 22b, 20b) directly or at least nearly directly to a convex area (10c, 12c, 20c, 22c) effective profiles of said tooth flanks matching in a manner that it comes to planiform contact regions (at A, B; Fig. Y below), linearly viewed in cross section (Fig. Y below), along a complete height (h1, h2; Fig. Y below) for the purpose of reducing contact stress that can reduce the rate of wear of the gears (see column 4, lines 61-65 and column 5, lines 59-64) and thus enhances the performance of the auxiliary drive.

Regarding claim 1, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide tooth flanks of said toothed gear wheels being involute-free or at least nearly involute-free in the force transmission area, and transition from a concave area directly or at least nearly directly to a convex area, effective profiles of said tooth flanks matching in a manner that it comes to planiform contact regions (at A, B; Fig. Y below), linearly viewed in cross section (Fig. Y below), along a complete height (h1, h2; Fig. Y below).

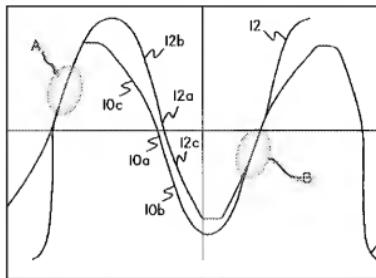


Figure Y: View of tooth flanks of Berliner Jr. et al.

KR20020046534 as modified above further comprises the following:

Re claims 2 and 5

- Second gear wheel (5) is made of a material with greater strength than the first gear wheel (4), the second gear wheel (5) being metal (abstract / L6-9).

Re claim 3

- At least sections opposing tooth flanks of gear wheels (10, 12; Berlinger) having nearly the same curvature in their tooth flanks (Fig. 1; C2 / L38-39; Berlinger)

Re claim 4

- Concave area (10b; Fig. 1; Berlinger) being situated in an area adjoining a tooth base (near 10b; Berlinger)
- Convex area (10c; Berlinger) being situated in an area of the respective teeth adjoining a tooth crest (near 10c; Berlinger).

Re claim 9

- During the during rolling off of the gear wheels (20, 22) there are always two or more teeth (see teeth in Fig. 2) of the gear wheels meshed with each other.

Re claim 12

- Engine auxiliary drive driving one or more balancing shafts (see lines 1-3 of abstract)

Re claim 13

- First and second gear wheels are designed as helical-toothed spur gears (see helical teeth at 5 and 4, respectively)

However, as to **claim 14**, KR20020046534 **does not** expressly disclose the first and second gear wheels are designed as straight-toothed spur gears.

Berlinger, Jr. et al. teaches the use of the first and second gear wheels (12, 10) being designed as straight-toothed spur gears (see Fig. 3A) for the purpose of avoiding the resultant thrust along the axis of the gear and that helical gears can produce as well as being easier to manufacture than helical gears.

Regarding **claim 14**, it would have been obvious to one having ordinary skill in the art at the time of the invention to alternatively provide the first and second gear wheels being designed as straight-toothed spur gears, as taught by Berlinger, in the device of KR20020046534 as modified above for the purpose of avoiding the resultant thrust along the axis of the gear and that helical gears can produce as well as being easier to manufacture than helical gears.

2. **Claims 6-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Korean PG Pub KR20020046534 and Berlinger, Jr. et al., US Patent, 6,101,892 as applied to claims 1-5 and 12-13 above, and further in view of Pickles, US Patent 2,760,381.

KR20020046534 discloses all the claim limitations, see above, but does **not** expressly disclose the following:

Re claim 6

- Tooth thickness of the teeth of the gear wheel made of metal being less than the thickness of the teeth of the plastic gear wheel.

Re claim 7

- The gear wheel made of plastic having a greater tooth width or tooth thickness on the pitch circle of the gear wheel than the space width between adjacent teeth.

Re claim 8

- The gear wheel made of metal having a smaller tooth width or tooth thickness on the pitch circle of the gear wheel than the space width between adjacent teeth.

Pickles teaches the use of a tooth thickness (T2) of the teeth (14) of a gear wheel (11) made of metal (C2 / L51-53) being less than the thickness (T1) of the teeth of the plastic gear wheel (12) (C2 / L59-65), where the wheel made of plastic (12) has a greater tooth thickness on the pitch circle of the gear wheel than the space width between adjacent teeth and the wheel made of metal (11) has a smaller tooth thickness on the pitch circle of the gear wheel than the space width between adjacent teeth (C2 / L30-36) for the purpose of increasing the strength of the plastic gear while not adding unnecessary material to the metal gear wheel (C1 / L60-65) thus providing a mechanism with lighter weight.

Regarding **claims 6-8**, it would have been obvious to one having ordinary skill at the time of the invention to provide a tooth thickness of the teeth of a gear wheel made of metal being less than the thickness of the teeth of the plastic gear wheel, where the wheel made of plastic has a greater tooth thickness on the pitch circle of the gear wheel than the space width and the wheel made of metal has a smaller tooth thickness on the pitch circle of the gear wheel than the space width, as taught by Pickles, in the device of KR20020046534 as modified above for the purpose of increasing the strength of the plastic gear while not adding unnecessary material to the metal gear wheel thus providing a lighter mechanism with lighter weight.

3. **Claims 10, 11 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Korean PGPub KR20020046534 and Berlinger, Jr. et al., US Patent, 6,101,892 as applied to claims 1-5 and 12-13 above, and further in view of Hiroi et al., PG Pub 2002/0051860.

KR20020046534 discloses all the claim limitations, see above, but does not expressly disclose the following:

Re claim 10

- The plastic gear wheel is an injection molded part that receives no additional treatment after the injection molding.

Hiroi et al. teaches the use of a plastic gear wheel (11; Fig. 3) being an injection molded part (para. [0030] / L4-6) that receives no additional treatment after the injection molding (para. [0015] / L1-5) to thereby reduce manufacturing costs that would otherwise be expensed by further treatments.

Regarding claim 10, it would have been obvious to one having ordinary skill at the time of the invention to alternatively provide a plastic gear wheel being an injection molded part that receives no additional treatment after the injection molding, as taught by Hiroi et al., in the device of KR20020046534 as modified above to thereby reduce manufacturing costs that would otherwise be expensed by further treatments.

Re claim 11

- The gear wheel made of plastic is injection molded onto a hub or a part of a shaft having raised parts and/or depressions on its outer circumference.

Hiroi et al. teaches the use of the gear wheel that is made of plastic (11) being injection molded onto a hub (12) having raised parts (15) on its outer circumference for the purpose of providing a power transferring gear with teeth, the gear being lightweight, easily customizable, and is easy to manufacture.

Regarding claim 11, it would have been obvious to one having ordinary skill at the time of the invention to alternatively provide a gear wheel that is made of plastic (11) being injection molded onto a hub (12) having raised parts (15) on its outer circumference for the purpose of providing power transferring gear with teeth, the gear being lightweight, easily customizable, and is easy to manufacture

Re claim 15

- The plastic for the first gear wheel is a homogeneous plastic.

Hiroi et al. teaches the use of the first gear wheel (11) being made of a homogeneous plastic (see paragraph [0011] lines1-3) for the purpose of providing high dimensional precision that can be attained through an injection molding process.

Regarding claim 15, it would have been obvious to one having ordinary skill at the time of the invention to alternatively provide use of the first gear wheel being made of a homogeneous plastic, as taught by Hiroi et al., in the device of KR20020046534 as modified above for the purpose of providing high dimensional precision that can be attained through an injection molding process.

Note: Regarding claims 10 and 11, the MPEP states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Response to Arguments

Applicant's arguments filed 1/27/2009 have been fully considered but they are not persuasive.

In response to applicant's argument that Chun (KR20020046534) is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

In this case, the invention disclosed in the Chun reference is in the field of applicant's endeavor as it pertains to auxiliary drive components for a motor vehicle. Applicant states in the specification, "*auxiliary drives include in particular the drives of camshafts, oil pumps or balancer shafts of combustion engines*" (para. [0002] / L6-7). Chun discloses a camshaft drive/balancer shaft in Figure 1, and thus is pertinent to applicant's field of endeavor. Further, Applicant states in the specification "*With such balancer shafts, the vibrations which are so unpleasant, especially with four-cylinder combustion engines, can be reduced significantly*" (para. [0002] / L7-10). The Chun references discloses a similar concern, "*balance shaft structure is provided to prevent noise caused due to the backlash during the operation of the first interlocking gear, while preventing resonance of balance shaft caused due to the resonance of*

the crank shaft" (abstract / L1-2). As such, the reference of Chun can also be deemed as reasonably pertinent to the particular problem with which the applicant was concerned.

Since the Chun reference can be deemed as analogous art and discloses structurally claimed features, the Chun reference can be deemed proper for use as prior art. Further, Applicant's argues that the Chun reference is irrelevant because Chun comprises of a plastic gear for different reasons than Applicant. As such, these arguments can be deemed as intended use and thus does not preclude the invention as taught in Chun from being readable prior art having structurally claimed features.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL YABUT whose telephone number is (571)270-5526. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard W. Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL YABUT/
Examiner, Art Unit 3656
3/31/2009

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656